Science and Weapons Daily Review

Tuesday 12 February 1985

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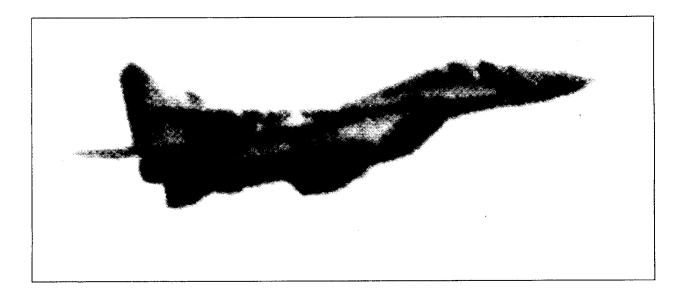
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Science and Weapons Daily Review	
USSR: FIRST PROFILE VIEW OF FULCRUM A FIGHTER AIRCRAFT	25 X 1
The first photography showing a profile view of the Soviet MiG-29 Fulcrum A fighter aircraft reveals that a highly raked inlet (top of inlet slanted forward of bottom of inlet) extends below the wing leading edge extensions and that the fuselage forebody is raised well above the engine inlet capture area (see figure 1).	25X1
Comment:	
The Fulcrum A's raised fuselage forebody gives it a profile different from the profile in our most recent assessment. The high angle of rake of the inlet suggests that the Fulcrum A has a two-dimensional, rectangular inlet similar to those on the Soviet MiG-25 Foxbat and the US F-15 aircraft. A reassessment of the internal fuel capacity, range/radius/endurance, and aerodynamic performance of the Fulcrum A may be required, depending on the layout of the engine inlets and the fuselage underside.	25X1 25X1
The Fulcrum A is a twin-engine fighter; consequently, it has either two separate engine inlet openings or one combined inlet opening that branches into two ducts (see configurations in figure 2). The configuration of the inlet openings affects the fuselage volume available for internal fuel storage. A dark area on the photograph, however, precludes a determination of the inlet opening configuration.	25X
The dark area at the inlet location is approximately 1 meter deep by 2 meters wide and has an estimated area of 1.5 to 2.5 square meters. Our estimate of the required inlet capture area for the Fulcrum A is 0.8 to 1.3 square meters (for two engines—includes maximum estimated engine airflow and bleed airflow requirements). Therefore, the dark area most likely obscures two inlet openings separated by a fuselage tunnel (see	

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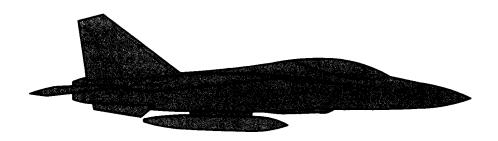
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Figure 1 Comparison of New Profile View Photograph With Previous Assessment of Fulcrum A



Drawing Based on Previous Assessment of Fulcrum A

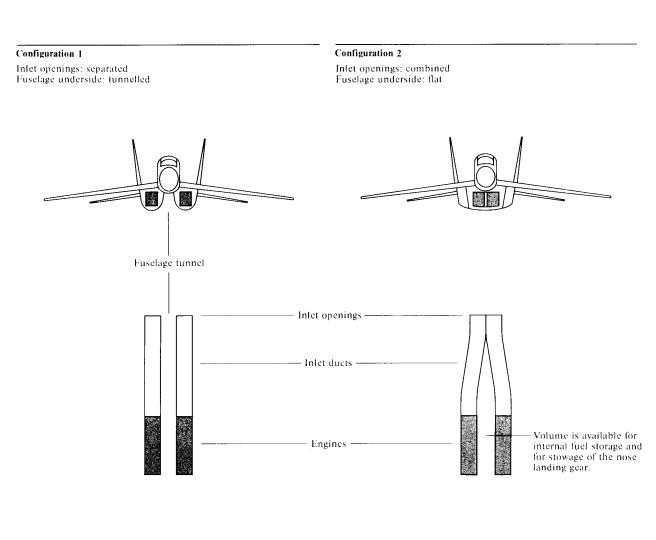


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Figure 2
Possible Inlet Configurations



olume available for se the low end of, .600-kilogram asse apacity of the Fulc ssessments of its o rould have to be re	gure 2). If so, the tun internal fuel storage. or possibly reduce, ou ssment of internal fue um A is less than 4,1% ombat range/radius/educed. The weight reases in thrust-to-weight	Consequently, we ur current 4,100- to le capacity. If the in 00 kilograms, our cendurance and cleareduction would resu	would have to onternal fuel current on takeoff weight ult in
pening (see config rovide additional futowage of the nose allet openings in thit we use the high end allet capture area and aternal fuel capacit	ity is that the dark are tration 2 in figure 2). selage volume for interesting gear (the note configuration). Configuration of, or possibly increased propulsion system of, combat range/radius	Such a configurati ernal fuel storage a se gear would have figuration 2 would ase, our current ass airflow requirements/endurance, and c	on would and for e to be aft of the require that sessment of the ts. The lean takeoff
eight probably wo	uld be close to our cu	irrent assessments.	

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SECRET	25 X
USSR: ACADEMY OF SCIENCES SELECTS NEW MEMBERS	25 X
At the meeting on 26 December 1984 of the Soviet Academy of Sciences General Assembly, six scientists were elected academicians to fill vacancies within the Earth Sciences Section. The scientists elected were Nikolay Alekseyevich Logachev, Nikolay Nikitovich Puzyrev, Yuriy	
Mikhaylovich Pushcharovskiy, Yeygeniy Ivanovich Shemyakin, Grigoriy Aleksandrovich Avsyuk, and Kirill Yakovlevich Kondrat'yev.	25X
Comment:	
The selections reflect an increased emphasis on applied research and also highlight the importance of political and personal ties for career advancement. Election to the academy is intended to be the highest Soviet academic honor bestowed in recognition of scientific achievement. Although theoretical researchers have traditionally been favored, three of the six new members have been in administrative positions for many years and have never been recognized as prominent scientists. Their administrative responsibilities have focused on the development of Siberian resources, especially energy. Thus, their election appears to be in keeping with the	
decree in August 1983 by the Central Committee and Council of Ministers that the results of scientific research are to be relevant to the needs of the economy.	25X
The value of personal connections is demonstrated by the fact that at least five of the six have ties with either Guriy Ivanovitch Marchuk, Chairman of the State Committee for Science and Technology, or Aleksandr Leonidovitch	
Yanshin, an academy vice president and head of the Earth Sciences Section.	25 X 1
	25X

JUDGMENTS: EVALUATION OF AN EAST GERMAN SEMICONDUCTOR MEMOR	DEVICE
The following is a summary of the Key Judgments from a recently published Reference Aid produced by the Office of	25X1
Scientific and Weapons Research	25)
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A recent evaluation of an East German 16-Kbit, dynamic random-access memory device (DRAM), designated U256D concluded that a West German mask set was probably used to produce the device.	D,
The U256D was fabricated using a silicon-gate, N-channel metal-oxide semiconductor (nMOS) process, which the evaluator described as "adequate The device has double-layer polysilicon and top-level metal interconnections. A severe narrowing, or "dog-boning," effect was detected at the edges of the metal line. This effect usually is caused by overetching during the metallization etch step in the fabrication process. The U256D successfully passed electrical parametric and functional tests at 0- and 80-degrees Celsius for a memory device rated with an access time	d :
200 nanoseconds	25)
The chip was encased in a plastic dual in-line package with a heat sink. A heat sink is an unusual feature in a microelectronic component that dissipates less than 1 watt. Manufacturers do not arbitrarily incur the additional cost of a heat sink without cause. We believe that the East Germans have experienced reliability problems with the U256D or its plastic package, which they have traced to poor thermal performance. The heat si probably provides a greater power dissipation capability and more stable	c

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